Photonics On Crystals

POC-OC-120211-Acousto-Optic Multi-Channel Modulators Datasheet

Key Features

- Allows simultaneous modulation of up to 10 optical channels.
- Reduces crosstalk and enhances linear modulation performance.
- Utilizes high-quality materials such as fused quartz, crystalline quartz, and Tellurium Dioxide for durability and efficiency.
- Provides low insertion loss (<3 dB) and high diffraction efficiency (>70%).
- Supports operation frequencies up to 200 MHz, ensuring high-speed modulation.

General Description

Photonics of Crystals (POC) **Acousto-Optic Multi-Channel Modulators (AOMM)** are advanced devices designed to modulate or deflect multiple optical beams simultaneously. By integrating transducer arrays into a single acousto-optic crystal, AOMMs significantly increase the number of modulated beams, reduce scanning rates, and lower modulation bandwidth, improving overall linearity and efficiency.

Compared to single-channel AOMs, AOMMs provide independent control of multiple beams or collimated light lines, making them ideal for demanding applications such as laser color printers, multi-channel acousto-optic spectrometers, optical digital computers, and video infrared image processing systems.

POC's AOMMs are constructed using low-scatter fused quartz, crystalline quartz, and Tellurium Dioxide to ensure low insertion loss, high diffraction efficiency, and robustness under high-power

conditions. These modulators support up to 10 channels and operate at frequencies up to 200 MHz, minimizing acoustic and electrical crosstalk while delivering precise performance.

General Applications and Examples

1. **Laser Color Printing:**
   AOMMs are integral to high-resolution laser color printers, providing simultaneous modulation of multiple beams to enable efficient and precise color printing processes.
2. **Spectroscopy and Imaging:**
   Multi-channel modulation enhances the performance of spectrometers and dynamic infrared imaging systems, enabling faster data acquisition and higher-quality image processing.
3. **2D Information Processing:**
   AOMMs are used in optical computing systems to modulate multiple light beams for parallel data processing, improving computational speed and accuracy.
4. **Material Processing:**
   AOMMs enable simultaneous modulation of multiple laser beams for high-speed micromachining, marking, and welding applications, enhancing productivity and precision.

Our Standard Products and Model Numbers

Model Number	Center Frequency (MHz)	Aperture (mm)	Number of Channels	Material	Mode	Wavelength (nm)	RF Connector	Housing
CAOMM-f-a-mt-w-cn-h	40.68	1	5	CQ / TE	C (Compression)	266	SMA-F	B23

Typical Specifications

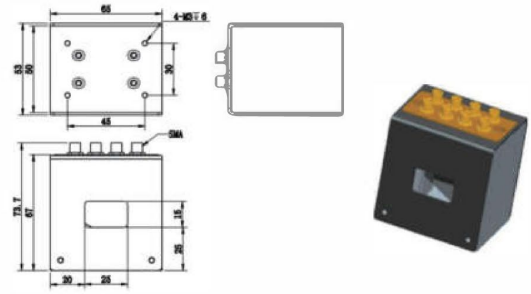
Wavelength (nm)	Aperture (mm)	Operating Frequency (MHz)	Number of Channels	Channel Crosstalk (dB)	Diffraction Efficiency (%)
370	0.2–1	100	5	>20	≥70
355	0.2–1	200	10	>20	≥70

Housing Dimensions (mm)

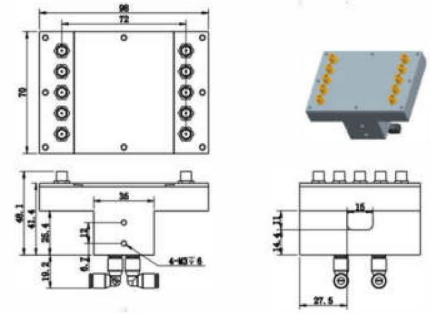
- **B23:** 65 x 45 x 35 mm, optimized for compact multi-channel setups with reduced footprint.

- **B36:** 98 x 72 x 36 mm, ideal for systems requiring larger configurations and higher channel counts.

B23



B36



POC Strength and Capabilities

Photonics of Crystals (POC) is a global leader in the development of advanced Acousto-Optic Multi-Channel Modulators. Our solutions are tailored to meet the complex needs of modern optical systems, delivering precision, reliability, and versatility.

Why Choose POC?

- **Innovative Design Expertise:** Our AOMMs are engineered to reduce crosstalk and improve modulation linearity, ensuring superior performance in demanding applications.
- **High-Quality Materials:** The use of fused quartz, crystalline quartz, and Tellurium Dioxide guarantees exceptional durability, low loss, and high diffraction efficiency.
- **Customization Options:** We offer fully customizable AOMMs to meet specific requirements, including channel count, frequency range, and material selection.
- **Comprehensive Support:** From design to deployment, POC provides complete support to ensure customers achieve the best possible outcomes with our modulators.

Partner with POC to elevate your optical systems with cutting-edge Acousto-Optic Multi-Channel Modulators.